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May 8, 1990

VIA OVERNIGHT MAIL

Jim Thayer
Environmental Specialist
Solid Waste Section
Iowa Dept. of Natural Resources
Wallace State Office Building
Des Moines, IA 50319

RECEIVED

NOV 15 1996

IOWA SECTION

SUBJECT: Sheller-Globe Corp. Keokuk Plant -
Site Assessment Workplan

Dear Mr. Thayer:

In accordance with our telephone conversation, attached please find the subject workplan. The workplan includes site background information, summary of previous UST closure activities and proposed future activities. We propose a two phase approach. Phase I will involve soil gas analysis to determine the aerial extent of contamination and survey/analysis of existing groundwater monitoring wells. An interim report will be submitted to IDNR, with recommendations for appropriate additional activities.

I trust this information meets your requirements. Please send written approval of the plan to my attention. If you have any questions, please call me at (313) 237-3627.

Sincerely,

UNITED TECHNOLOGIES AUTOMOTIVE, INC.
(Engineered Systems Division)

Stephen J. Ridella

Stephen J. Ridella
Senior Environmental Administrator

SJR/ts
Attachment



R00110844
RCRA RECORDS CENTER

SHELLER-GLOBE CORPORATION
KEOKUK PLANT

SITE ASSESSMENT WORK PLAN

May 3, 1990

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1.0 INTRODUCTION

Five underground storage tanks were removed from the ground at the Sheller-Globe Keokuk plant on October 12-13, 1989. The Iowa Dept. of Natural Resources (IDNR) was verbally notified of leaks discovered during the removal. The following Plan has been prepared in accordance with Chapter 567-133 of the Iowa Administrative Code, the rules pertaining to cleanup actions necessary to meet the goals of the State for groundwater protection. Preparation of a Site Assessment Work Plan was requested by IDNR, in correspondence dated February 8, 1990.

2.0 SITE BACKGROUND

2.1 Site Location

The site is located off Rt. 218 on the west end of the town of Keokuk, Iowa. The use of the area around the facility is varied. To the east is a residential area. The facility is then bounded by commercial properties, including hotels, service stations and restaurants. To the west of the facility, on company property, is a moderately sized lake. A map of the surrounding area is included as Figure 1.

2.2 Site History

The Keokuk facility began operation in 1914. The site has been used for the manufacturing of rubber and related products throughout its operating history. The plant currently produces weather stripping for automobiles, as well as related vinyl products.

2.3 Site Description

The facility property encompasses approximately 44.5 acres of land extending west from Main Street. The property is occupied by facility structures on the eastern half and contains some open fields and woods on the western half. Site topography generally slopes from east to west, ranging from a high of 660 feet m.s.l. near Main Street, to a low of approximately 600 feet m.s.l. along Soap Creek.

The regional geology generally consists of glacial till deposits overlying bedrock. Deposits within the tills may be comprised primarily of clay, with some silt, gravel, or various combinations of these materials. The upper bedrock formations include, in descending order:

- St. Louis Formation - limestone
- Warsaw Formation - shale with interbedded cherty limestone; and
- Burlington-Keokuk Formation - dolomite, cherty limestone.

The depth to bedrock in the region varies with location, surface topography, and local erosional features. A boring log from a well located approximately one mile southeast of the facility along Main Street encountered limestone at approximately 95 feet below ground surface. The

till deposits, St. Louis and Burlington-Keokuk Formations are still used as aquifers in locations, although the till is not typically a significant aquifer. The Warsaw Formation tends to act as a regional aquitard.

Plant process water and drinking water is supplied by the City of Keokuk. Some homes in the Keokuk area are known to use ground water. However, plant personnel indicated that they believed most homes and businesses immediately adjacent to the plant to be on city water.

2.4 Underground Storage Tank System Description

The underground storage system was located to the east of the chemical mixing and hazardous materials storage building. The chemical building lies to the southwest of the main plant buildings. An active railroad services the plant and the tracks run between the main plant and the chemical building. The former underground storage tank area consists of 10 to 15 feet of fill overlaying native soils.

The underground storage system consisted of five tanks and related piping. The tanks were arranged as shown in Figure 2. The piping for the system consisted of a double run (one abandoned) of 2 inch pipe from the south end of the manufacturing facility to the tank cluster. Piping also ran from the chemical building to the cluster.

The following details the layout of the system:

Tank	No. Gallons	Year Placed	Material Stored	Construction	Last Used
1	6000	1980	Toluene	Steel	'89
2	300	1966	Hexane	Steel	'76
3	1500	1971	MEK*	Steel	'80
4	1500	1971	MEK*	Steel	'85
5	4000	1971	Methylene Chloride	Steel	'86

*Methyl Ethyl Ketone

3.0 UST CLOSURE ACTIVITIES

3.1 UST Removal

Keokuk Contractors was contracted to excavate the five underground storage tanks and Randolph and Associates was contracted to provide general oversight activities. After a preliminary walk-over of the site by Randolph & Associates, excavation of the tanks began. The excavated soils were placed on plastic in an area designed for temporary storage. The soils were later containerized in rollofs onsite pending final disposal.

As the excavation proceeded, strong product odors were noticeable. The tanks were excavated and removed in order from north to south. When the first tank was removed, visibly contaminated liquids became noticeable as they seeped into the excavation. The liquids were pumped from the excavation into an above ground tank for temporary storage. Samples of the liquid were taken for analytical evaluation. Results are included in Appendix 1. The liquids seeped into the excavation as each of the five tanks were removed and were continuously pumped as they appeared. Soil samples were also collected from the excavation floor (See Figure 2 for locations). However, these samples were not analyzed.

The following documents the conditions of each tank as they were removed:

<u>Tank</u>	<u>No. Gallons</u>	<u>Condition</u>	<u>Date Pulled</u>	<u>Comments</u>
1	6000	Corrosion. some pitting	10/12/89	Known Leaker
2	300	Heavy Corrosion Pitting, Leaking Visibly	10/12/89	Overall Poor Condition, Known Leaker
3	1500	Heavy Corrosion Pitting, Liquids Flowing from Holes	10/12/89	Poor Condition Known Heavy Leaker
4	1500	Some Corrosion Little Pitting, No Visible Holes	10/13/89	Good Overall Condition
5	4000	Little Corrosion No Visible Holes	10/13/89	Good Overall Condition

Pictures were taken of the tanks to document their condition.

3.2 Pipeline Investigation

An investigation of the piping system was also performed by advancing soil borings at 20 feet intervals along the length of the pipeline. The borings were advanced to a depth 2 feet below the level of the pipes. An HNU reading was then taken through the auger. Two sets of pipes were found at the site. One had been abandoned in place prior to 1980 and was known to have been leaking. See Appendix 2 for summary of results.

3.3 Monitoring Well Installation

Four 4-inch monitoring wells were installed on the site in the locations shown in Figure 3. The diagrams detailing well construction are given in Appendix 3. The borings were continuously sampled as they were advanced using a split spoon sampling device. As the borings were advanced, strong odors were noticeable coming from the auger stems. A sample retrieved from the 16 - 18' depth level of well number 3 had a strong odor and a reading of 725 ppm recorded on the photoionization device. This depth was found to

be synonymous with the previous ground surface, before fill was placed on the site.

Groundwater was not encountered after well installation, therefore sampling was not performed. However, there appeared to be seepage into some of the wells; particularly from the excavation area into well #2. Preliminary results indicate the tight native till beneath the fill is acting as a confining layer.

3.4 Soil Boring Program

Four additional borings were drilled in the vicinity of the excavation area to further define the fill. See Appendix 3 for boring logs, and Figure 2 for location. A soil sample from B-2 at 14 - 16 feet was analyzed for metals and volatiles. See Appendix 1 for results. Approximately 210 ppm of toluene was detected at the top of the till.

4.0 PROPOSED ACTIVITIES

In order to provide a more detailed characterization of the hydrogeologic setting of the facility and evaluate the extent of soil and/or groundwater contamination, a two phase approach is proposed. Phase I involves a more detailed review of local hydrogeological data, a soil gas survey to delineate the horizontal extent of the contaminant plume, and survey/sampling of existing groundwater monitoring wells. A technical memorandum will be submitted to IDNR after completion of Phase I activities. Based on these results, appropriate additional borings/wells will be proposed to further evaluate the extent of contamination. The following details proposed Phase I activities.

4.1 Additional Background Data Collection

Prior to initiating field work, UTA's contractor will review any additional available background data regarding site conditions and regional geologic and hydrogeologic conditions. An inventory of nearby drinking water wells within 1/2 mile of the site will be performed based on Iowa Geological Survey Records. Also, prior to initiating work, the UTA contractor will prepare a site-specific Health and Safety Plan (HSP). The HSP will be for contractor use only during field work and will meet USEPA and OSHA requirements for working on hazardous waste sites.

4.2 Soil Gas Investigation

The purpose of the soil gas investigation is to characterize the soil gases in the fill material for the presence of site specific volatile compounds. The compounds will be those solvents once stored in the now removed underground storage tanks at the site.

Thirty-two locations have been selected for the soil gas investigation at the site. See Figure 4 for locations. Sample locations are spaced at approximately 30 foot intervals. The soil gas survey will consist of hydraulically pushing an approximately 1-inch diameter soil gas probe into the soil using a mobile unit mounted on a cargo van. The cargo van also contains a computer-driven gas chromatograph analytical system (GC) and power supply.

Approximately three test holes will be performed first at multiple depths to determine where the highest readings are. The remaining samples will be taken at that depth. Once the probe has been pushed to the appropriate depth, the probe is retracted slightly to allow a soil gas sample to be collected and transferred to the GC for analysis. Soil gas quality assurance control will consist of analyzing blank gas samples periodically, to assure that no background detections are present in the field GC.

All soil gas samples will be analyzed in the field laboratory for toluene, hexane, methyl ethyl ketone, and methylene chloride. It is tentatively estimated that up to 32 soil gas samples will be collected. If samples 25 - 29, at the bottom of the slope, are non detect, samples 30 - 32, which are further west, will not be performed.

4.3 Existing Monitoring Well Survey

This task will be conducted to evaluate the presence or absence of separate phase product in those wells, and establishing preliminary ground water flow directions. During this task, all monitoring wells and soil gas points will be surveyed to a permanent plant grid system or established bench mark to be used for future reference. Water levels will be measured relative to the common bench mark to establish elevations and flow directions.

Five samples for volatiles analysis will be collected from the monitoring wells. One sample of ground water will be collected from each well, and if necessary, one sample of free product will be collected and analyzed from one well. Existing well locations are shown in Figure 3.

The five samples will be analyzed by EPA SW-846 Method 8240 or equivalent for the four site-specific solvents toluene, hexane, methyl ethyl ketone, and methylene chloride. QA/QC samples will include one duplicate sample and one trip blank.

The following procedures will be used to collect groundwater level and separate phase product thickness measurements:

- All Health and Safety Plan personal protection and air monitoring requirements will be followed. Unlock well and remove well cap from upwind side of well. Monitor head space of well and breathing zone for volatile organic compounds with an organic vapor analyzer (HNu or OVA).
- Measure fluid levels with an oil/water interface probe, from the top of the well riser, and record the depth to the top of any separate phase product, the depth to water, and the total depth of the well. All depth measurements will be made to the nearest 0.01 foot and will be recorded along with the date and time of the readings in a field notebook or on a field data sheet.
- Decontaminate the interface probe between wells by wiping with a clean cloth using alconox soap and/or methanol followed by a final rinse with distilled water.

The following procedures will be followed to purge and sample ground water from monitoring wells:

- Follow steps outlined above for the ground water level and separate phase product thickness measurements.
- Each well will be purged of 3 well volumes of water or until evacuated to dryness. The wells will be purged with a decontaminated stainless steel or teflon bailer and new bailer cord or a decontaminated peristaltic pump. Record date, time, ground water level, and separate phase thickness in field notebook or on field data sheet.
- Ground water samples will be collected using a decontaminated teflon or stainless steel bailer. In wells containing separate phase product, a bottom emptying bailer device may be used to separate water from separate phase product. Ground water will be removed from the well and placed in the appropriate sample containers with the appropriate preservative (as required for analysis).
- Ground water field parameters (pH, temperature, and specific conductance) will be measured at the time samples are collected at each well and will be recorded in the field notebook or on the field data sheet.
- Wells will be capped and the well protective casings locked upon completion of sampling.
- All samples will be stored on ice and shipped to the laboratory under chain-of-custody procedures.

4.4 Technical Memorandum

Following completion of the previously described field activities and laboratory analyses, a report will be provided summarizing the findings of the site assessment, and containing the following:

- Geologic Cross-Sections (If available)
- An Inventory of Nearby Drinking Water Wells (Based on Iowa Geologic Survey (IGS) Records Within 1/2-Mile)
- Description of Sampling and Analysis Procedures
- Soil Gas Survey Results
- Potentiometric Surface Configuration
- Concentrations of Contaminants in Groundwater
- Listing of Data
- Listing of References
- Summary of any Necessary Additional Activities (As Appropriate)
- Implementation Schedule for Additional Activities (As Appropriate)
- Other Information as Appropriate

5.0 IMPLEMENTATION SCHEDULE

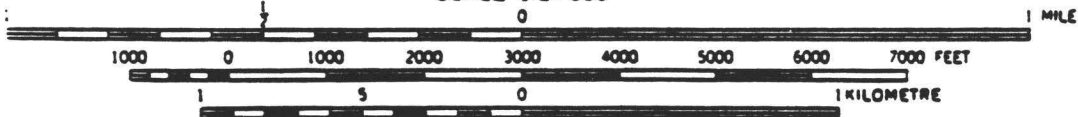
The Site Assessment Plan activities will be implemented according to the following schedule:

<u>Activity</u>	<u>Completion Time</u>
Plan Approval	Day 0
Mobilization	Day 15
Completion of Sampling	Day 30
Report Submittal	Day 75

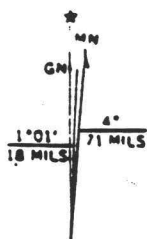
FIGURES



SCALE 1:24 000



CONTOUR INTERVAL 10 FEET
 DOTTED LINES REPRESENT 5-FOOT CONTOURS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929



UNITED TECHNOLOGIES AUTOMOTIVE, INC.
 ENGINEERED SYSTEMS DIVISION
 KEOKUK, IOWA FACILITY

SITE LOCATION MAP

DEN. BY 58	DATE 02/19/90	PROJECT NO.	FIG. NO.
CHE'D BY 826	DATE 2/28/90	89C7735	1

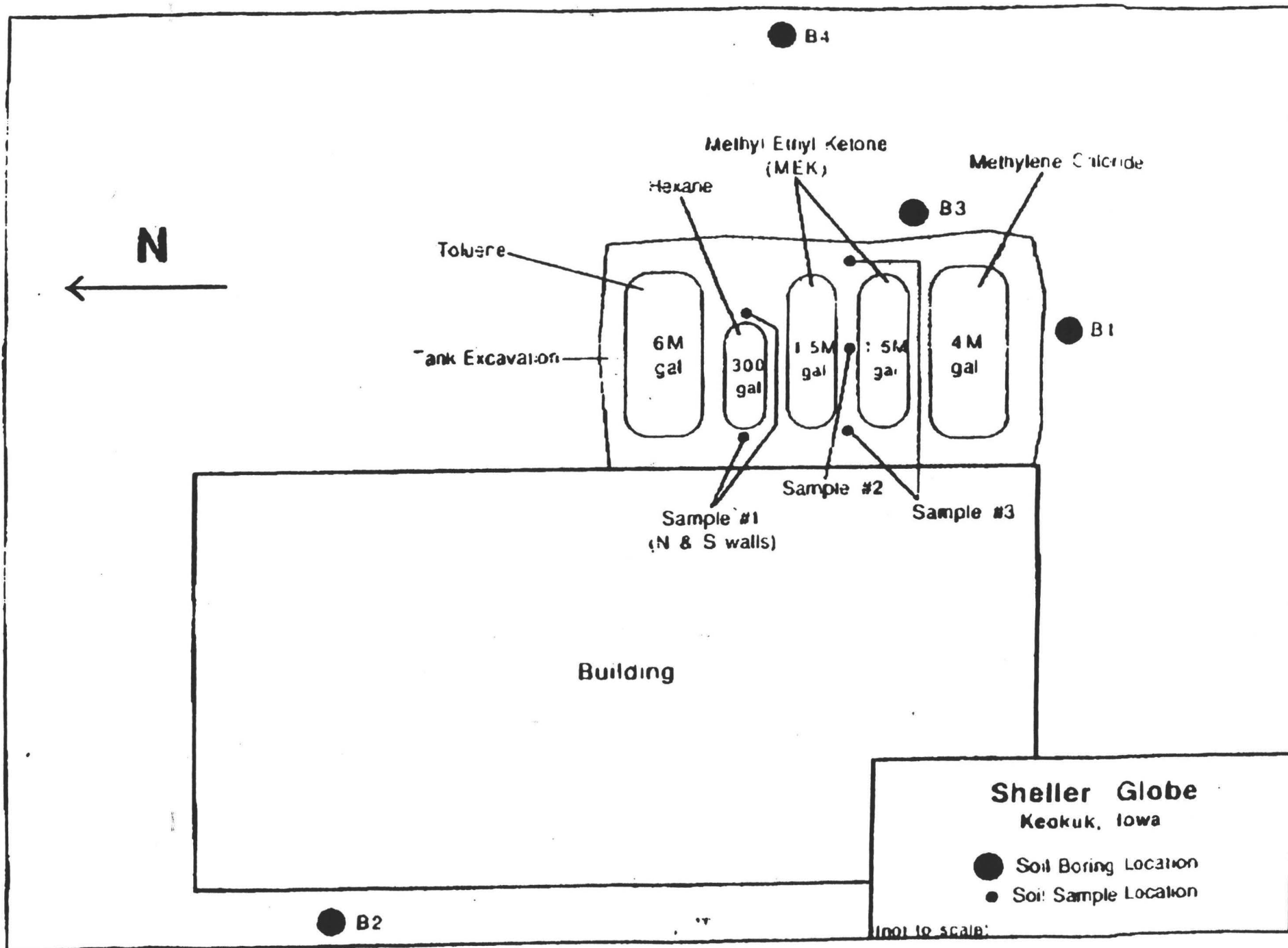


FIGURE 2

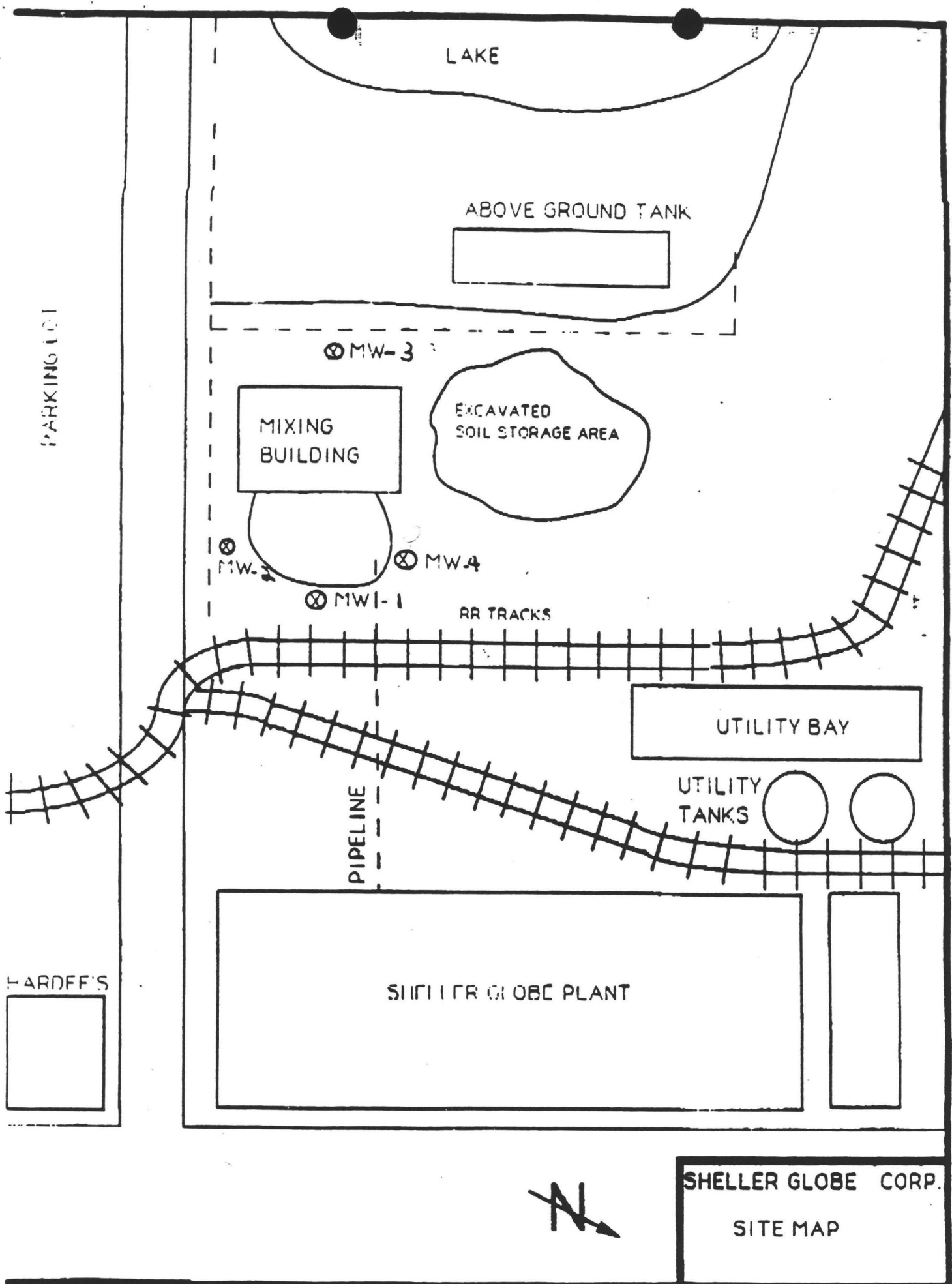


FIGURE 3

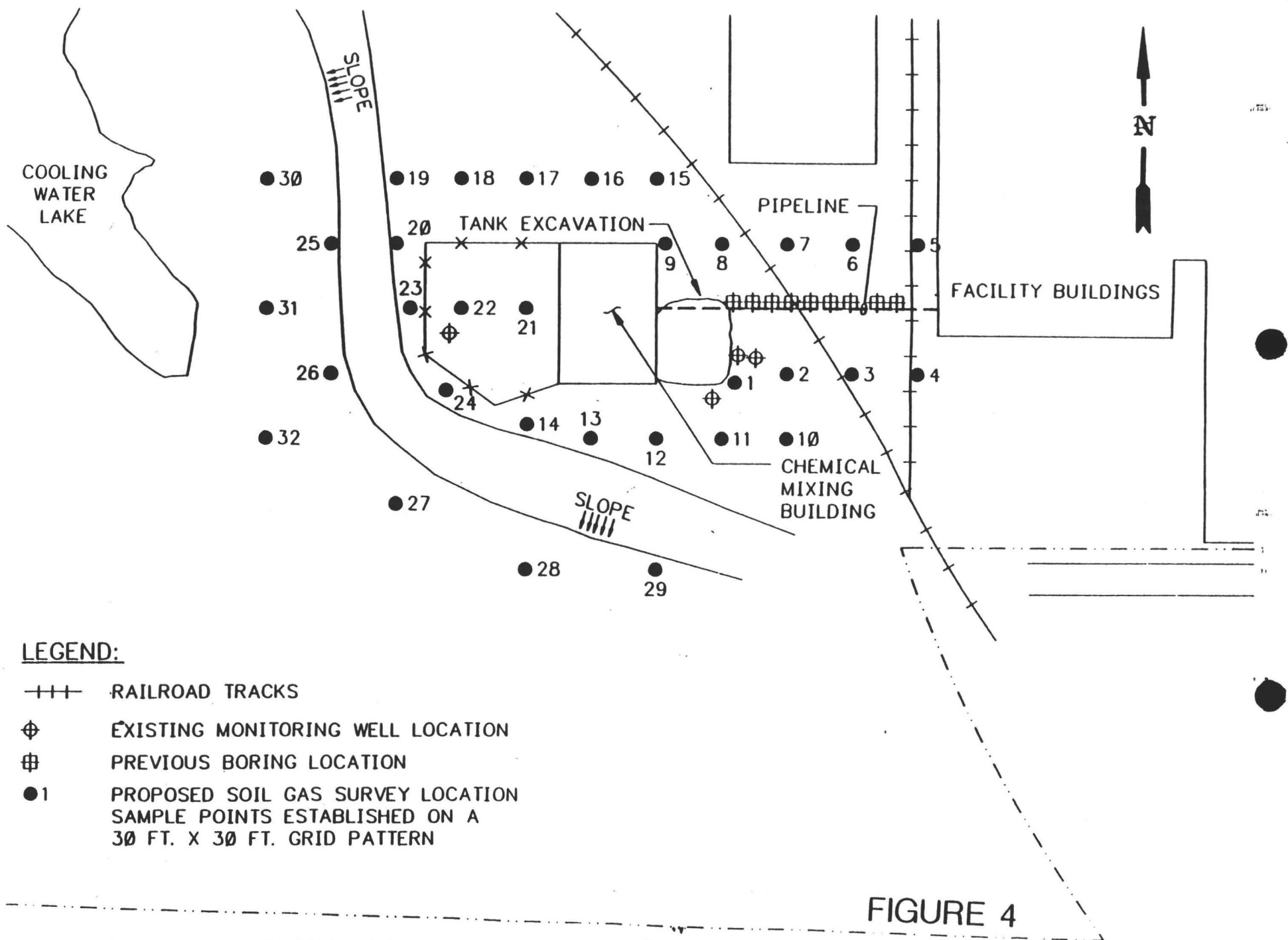


FIGURE 4

UNITED TECHNOLOGIES AUTOMOTIVE, INC.
KEOKUK, IOWA

APPENDIX 1



Randolph & Associates, Inc.

8901 NORTH INDUSTRIAL ROAD PEORIA ILLINOIS 61615-1589
TELEPHONE 309-692-4422

VOLATILE ORGANIC COMPOUNDS -- Target Compound List

TO: Sheller Globe Corporation
3200 Main Street
Keokuk, IA 52632
ATTN: Mr. Andy Edgar

DATE: 11-8-89
DATE REC'D: 10-16-89
PROJECT NO.: 1-0993.004.01
PAGE 3 OF 3

RAI SAMPLE NO.: --- 891016-02
SAMPLE DATE: ---
DESCRIPTION: Quant. Limit Tank Exc.
ug/l (ppb) Seepage Water

Chloromethane	10	< 10
Bromomethane	10	< 10
Vinyl Chloride	10	6 J
Chloroethane	10	< 10
Methylene Chloride	5	2.600
Acetone	10	2.500
Carbon Disulfide	5	< 5
1,1-Dichloroethene	5	< 5
1,1-Dichloroethane	5	66
1,2-Dichloroethene (total)	5	170
Chloroform	5	5
1,2-Dichloroethane	5	8
2-Butanone	10	9.900
1,1,1-Trichloroethane	5	63
Carbon Tetrachloride	5	< 5
Vinyl Acetate	10	< 10
Bromodichloromethane	5	< 5
1,2-Dichloropropane	5	< 5
cis-1,3-Dichloropropene	5	< 5
Trichloroethene	5	160
Dibromochloromethane	5	< 5
1,1,2-Trichloroethane	5	< 5
Benzene	5	36
trans-1,3-Dichloropropene	5	< 5
Bromoform	5	< 5
4-Methyl-2-Pentanone	10	< 10
2-Hexanone	10	< 10
Tetrachloroethene	5	32
1,1,2,2-Tetrachloroethane	5	< 5
Toluene	5	170.000
Chlorobenzene	5	< 5
Ethylbenzene	5	< 5
Styrene	5	< 5
Xylene (Total)	5	190

J - Estimated Concentration.

Report Approved By: Barbara G. Rave-Hash

Barbara G. Rave-Hash, Manager

JMR/L:56

An IEPA Contract Laboratory Laboratory Operations

Disclaimer: Liability to Randolph & Associates, Inc. not to exceed cost of analysis.



Randolph & Associates, Inc.

8901 NORTH INDUSTRIAL ROAD, PEORIA, ILLINOIS 61615-1589
TELEPHONE 309-692-4422

TO: Sheller Globe Corporation

3200 Main Street

Keokuk, IA 52632

ATTN: Mr. Andy Edgar

REPORT DATE: 11-8-89

DATE REC'D: 10-16-89

PROJECT NO.: 1-0993.004.01

PAGE 1 OF 3

RAI SAMPLE 891016-01
SAMPLE DATE -----

DESCRIPTION B-2 16-18'
Soil

Cyanide	< 0.010
Sulfide	116
Arsenic	11.5
Barium	63.4
Cadmium	1.85
Chromium	9.18
Lead	22.6
Mercury	< 0.020
Selenium	< 0.050
Silver	< 0.10
VOCs, ug/kg	*

*See Attached
Results in mg/kg unless otherwise specified.

Report Approved By: Barbara G. Ray-Hash

Barbara G. Ray-Hash
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.
JMR/L:56

An IEPA Contract Laboratory

Disclaimer: Liability to Randolph & Associates, Inc. not to exceed cost of analysis.



Randolph & Associates, Inc.

8901 NORTH INDUSTRIAL ROAD PEORIA ILLINOIS 61615-1589
TELEPHONE 309-697-4422

VOLATILE ORGANIC COMPOUNDS -- Target Compound List

TO: Sheller Globe Corporation
3200 Main Street
Keokuk, IA 52632
ATTN: Mr. Andu Edgar

DATE: 11-8-89
DATE REC'D: 10-16-89
PROJECT NO.: 1-0993.004.01
PAGE 2 OF 3

RAI SAMPLE NO.: --- 891016-01
SAMPLE DATE: ---
DESCRIPTION: Quant. Limit 8-2 16-18'
ug/kg (ppb) Soil

Chloromethane	10	< 10
Bromomethane	10	< 10
Vinyl Chloride	10	< 10
Chloroethane	10	< 10
Methylene Chloride	5	< 5
Acetone	10	< 10
Carbon Disulfide	5	< 5
1,1-Dichloroethene	5	< 5
1,1-Dichloroethane	5	< 5
1,2-Dichloroethene (total)	5	< 5
Chloroform	5	< 5
1,2-Dichloroethane	5	< 5
2-Butanone	10	< 10
1,1,1-Trichloroethane	5	< 5
Carbon Tetrachloride	5	< 5
Vinyl Acetate	10	< 10
Bromodichloromethane	5	< 5
1,2-Dichloropropane	5	< 5
cis-1,3-Dichloropropene	5	< 5
Trichloroethene	5	< 5
Dibromochloromethane	5	< 5
1,1,2-Trichloroethane	5	< 5
Benzene	5	< 5
trans-1,3-Dichloropropene	5	< 5
Bromoform	5	< 5
4-Methyl-2-Pentanone	10	< 10
2-Hexanone	10	< 10
Tetrachloroethene	5	< 5
1,1,2,2-Tetrachloroethane	5	< 5
Toluene	5	210,000
Chlorobenzene	5	< 5
Ethylbenzene	5	< 5
Styrene	5	< 5
Xylene (Total)	5	< 5

Report Approved By: Barbara G. Rava-Hash

An IEPA Contract Laboratory
Barbara G. Rava-Hash, Manager
Laboratory Operations

JMR/L:56

Disclaimer: Liability to Randolph & Associates, Inc. not to exceed cost of analysis.

APPENDIX 2

The following table illustrates the HNU values recorded at each interval.

Pipeline Investigation		
<u>Boring</u>	<u>HNU</u>	<u>Comments</u>
(Starting from manufacturing building to tank excavation)	Reading in ppm	
1	N/A	Skipped too close to electric lines
2	525	Free product 3' gravel fill
> (Combined between R.R. Tracks)		strong odor
3		
4	N/A	Hit buried R.R. tie could not advance over 6"

5	20	Gravel and clay fill, change auger and rinse stopper
6	60	Gravel, clay fill 3" asphalt
7	160	4" concrete, gravel & clay fill
8	225	"
9	400	"
10	65	"
11	72	"

APPENDIX 3